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Attorney Reference Number 3382-68602-01
Application Number 09/811,236

In the Claims:

Claims 1-24, 28-29, 35, 43, 49, 54-57, and 60-62 have been canceled. Please amend claims 25-27, 30-34, 36-42, 44-48, 50-53, and 58-59 as follows and add claims 63-72:

1-24. (Canceled)

25. (Currently amended) A method for accessing a user-selectable service on a controlled device in an ad hoc network, the method comprising:

creating a definition of a the controlled device using an XML-based language, wherein the definition includes a service control protocol definition; and

storing the definition on at least one computer-readable medium;

identifying a set of states in a service state table on the controlled device in accordance with the service control protocol definition for the user-selectable service;
determining a set of commands in accordance with the service control protocol definition to control the user-selectable service and to update the set of states identified by the service state table; and

generating a service control protocol in accordance with the service control protocol definition to interact with the user-selectable service, wherein the service control protocol comprises plural network messages having a content and a sequence used to interact with the user-selectable service.

26. (Previously presented) A method as recited in claim 25, wherein the storing comprises storing the definition on a computer-readable medium resident at the controlled device.

27. (Previously presented) A method as recited in claim 25, wherein the storing comprises storing at least part of the definition on a computer-readable medium located remotely from the controlled device.

28. (Canceled)

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29. (Canceled)

30. (Previously presented) A method as recited in claim 29, wherein the storing comprises:

storing the device portion on a first computer-readable medium resident at the controlled device; and

storing the service portion on a second computer-readable medium located remotely from the controlled device, but accessible over a network.

31. (Previously presented) A method as recited in claim 29, further comprising making both the device portion and the service portion available at runtime over a network.

32. (Currently amended) A method of dynamically self-bootstrapping a computing device onto a peer network, comprising:

storing a dynamically discoverable definition of the computing device, the definition including a set of instructions to define defining a protocol of network data messages protocol ~~to define services~~ through which a series of ~~the~~ network data messages are communicated to access a service on the computing device; and

making the definition available to other computing devices on the network.

33. (Currently amended) One or more computer-readable media having stored thereon a description of a device that is configured to dynamically bootstrap itself onto a peer network, the description comprising:

a first set of XML-based code strings that define attributes of the device; and

a second set of XML-based code strings that define one or more services exposed by the device, the second set of XML-based code strings including data to create service specific data messages, wherein the second set of XML-based code strings comprises: a service type element, a control URL element, an event subscription URL element, and a service control protocol declaration element, wherein the service control protocol declaration element

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includes a contract to define interaction with the one or more services exposed by the device through plural network messages having a content and a sequence.

34. (Previously presented) A computer-readable medium as recited in claim 33, wherein the first set of XML-based code strings contain a reference to the second set of XML-based code strings.

35. (Canceled)

36. (Previously presented) A computer-readable medium as recited in claim 33, wherein the first set of XML-based code strings is stored on a first computer-readable medium and the second set of XML-based code strings are stored on a second computer-readable medium separate from the first computer-readable medium.

37. (Previously presented) A computer-readable medium as recited in claim 33, wherein the second set of XML-based code strings comprises at least one or more universal resource locators to one or more locations that host one or more descriptions of the one or more services.

38. (Currently amended) A data structure stored on one or more computer-readable media that is instantiated in accordance with a schema, the schema comprising:

a device description written in an XML-based language to describe a controlled device;
and

a service description written in an XML-based language to describe at least one service supported by the controlled device, the service description describing how to access the at least one service supported by the controlled device **through a set of XML-based service strings, the set of XML-based service strings comprising in part a network message protocol definition to describe interaction between the at least one service supported by the controlled device via plural network messages, the plural network messages having a content and a sequence.**

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39. (Previously presented) A computer-readable medium as recited in claim 38, wherein the device description is stored at a first location and the service description is stored at a second location remote from the first location, but accessible via a network.

40. (Previously presented) A computer-readable medium as recited in claim 38, wherein the device description contains a reference to the service description.

41. (Previously presented) A computer-readable medium as recited in claim 38, wherein the device description contains at least one other device description nested therein.

42. (Currently amended) A dynamically self-bootstrapping computing device comprising:

a description, written in an XML-based language, that describes how to remotely operate the computing device, the description comprising a device description to describe attributes of the computing device and a service description to describe one or more services exposed by the computing device; and

description means, responsive to a description request received by the computing device on a network, for sending a description message based on the description that defines interaction via data messaging with the computing device over the network.

43. (Canceled)

44. (Previously presented) A dynamically self-bootstrapping computing device as recited in claim 42, wherein the device description and the service description are located remotely from one another and separated by a network.

45. (Previously presented) A dynamically self-bootstrapping computing device as recited in claim 42, wherein the device description and the service description are made available at runtime over the network.

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46. (Previously presented) A dynamically self-bootstrapping computing device as recited in claim 42, wherein the description comprises multiple descriptions that describe how to remotely operating multiple computing devices logically contained within the computing device.

47. (Previously presented) A dynamically self-bootstrapping computing device as recited in claim 42, wherein the description is a first description, further comprising a second description, written in an XML-based language, that describes how to remotely operate another computing device, the second description being nested within the first description.

48. (Previously presented) A computing device comprising:

a memory;

self-describing data stored in the memory and written in an XML-based language, the self-describing data describing how to operate the computing device and identifying a set of attributes of the computing device, wherein a subset of the attributes define a service control protocol comprising a set of network messages having an attribute-defined content and an attribute-defined sequence; and

a processor coupled to the memory to submit the self-describing data to remote entity on a network.

49. (Canceled)

50. (Previously presented) A computing device as recited in claim 47, wherein the self-describing data comprises device data to describe attributes of the computing device and one or more universal resource locators to one or more services exposed by the computing device.

51. (Previously presented) An ad hoc peer network comprising:

multiple controlled devices configured to dynamically self-bootstrap onto the network, individual controlled devices comprising a device description to describe attributes of the computing device and a service description to describe one or more services exposed by the computing device, the device and service descriptions defining a messaging protocol, the device and service descriptions being written in an XML-based language; and

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one or more user control points to initiate communication with the controlled devices over the network.

52. (Previously presented) An ad hoc peer network as recited in claim 51, wherein the device description and the service description for an associated controlled device are both stored on the associated controlled device.

53. (Previously presented) An ad hoc peer network as recited in claim 51, wherein the device description and the service description for an associated controlled device are stored separately from one another so that the device description is stored on the associated controlled device and the service description is stored remotely from the associated controlled device, but is accessible via the network.

54. (Canceled)

55. (Canceled)

56. (Canceled)

57. (Canceled)

58. (Previously presented) The method of claim 25 wherein the service control protocol definition comprises a definition of a network messages protocol through which methods, queries, and event notifications are invoked on the device.

59. (Currently amended) The method of claim 25 wherein **the content and sequence of the service control protocol definition is comprises written according to a contract definition language, the contract definition describing an end-point, a protocol, a messaging pattern, a delivery characteristic, and a payload delivered by the service control protocol.**

60. (Canceled)

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61. (Canceled)
62. (Canceled)
63. (New) The method of claim 25 wherein the service control protocol comprises a wire protocol definition, a sequence definition, and a content definition.
64. (New) The method of claim 25 wherein the definition of the controlled device comprises XML-language elements to identify on the controlled device the manufacturer, model name, and model description.
65. (New) The method of claim 64 wherein the definition comprises a root device element, a unique device name element, a friendly name element, a device type element, and an icon list element.
66. (New) The method of claim 65 wherein the icon list element comprises an icon element, an icon size element, an icon color element, an icon depth element, an icon image type element, and an icon image element.
67. (New) The method of claim 64 wherein the definition of the controlled device further comprises a service element.
68. (New) The method of claim 67 wherein the service element comprises a service type element, a control URL element, an event subscription URL element, and a service control protocol declaration element.
69. (New) The method of claim 25 wherein the service control protocol definition comprises an XML document consisting of a root element, a service state table element, and an action list element.

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70. (New) The method of claim 69 wherein the service state table element comprises a set of state variable elements to represent the set of states in the service state table.

71. (New) The method of claim 69 wherein the action list element comprises a set of action elements to specify the name of an action to invoked on the controlled device.

72. (New) A computer-readable medium as recited in claim 33 wherein the service control protocol declaration element comprises an XML-code string consisting of a root element, a service state table element, and an action list element.